WHAT IS CLAIMED IS:

1. A system comprising:
   (a) a scanner that performs a scanning protocol on a subject;
   (b) two or more devices each comprising cameras and integrated sources of radiation that transmit radiation incident on three or more markers on the subject and detect the radiation reflected by the markers; and
   (c) a processor that processes data based on the radiation detected by the cameras and communicates with the scanner to update the scanning protocol to compensate for movement of the subject.
2. The system of claim 1, wherein the scanner is a magnetic resonance scanner.
3. The system of claim 2, wherein the cameras can function in a region having a magnetic field strength of more than 100 Gauss without an appreciable loss of accuracy.
4. The system of claim 1, wherein the cameras are infrared cameras and the sources of radiation are light-emitting diodes that emit diffuse pulsed infrared radiation.
5. The system of claim 1, wherein two cameras detect the radiation.
6. The system of claim 5, wherein the angle formed between the two devices and the axis of the scanner is approximately 45 degrees.
7. The system of claim 5, wherein the angle formed between the two devices and the axis of the scanner is between approximately 30 and 60 degrees.
8. The system of claim 1, wherein the cameras are accurate to within 0.1 millimeter or less.
9. The system of claim 1, wherein the processor is a computer.
10. The system of claim 1, further comprising two or more mirrors that reflect radiation to be incident on the cameras.
11. The system of claim 1, wherein the markers are approximately spherical.
12. The system of claim 1, wherein the number of markers is more than three.
13. The system of claim 1, further comprising:
    (d) a display that displays an image of the subject.
14. A method of compensating for movement of a subject during scanning, the method comprising:
    (a) performing a scanning protocol on a subject;
    (b) detecting diffuse radiation reflected by three or more approximately spherical markers

on the subject; and

(c) processing data based on the radiation detected by the cameras and updating the scanning protocol to compensate for motion of the subject.

15. The method of claim 14, wherein the scanning protocol is a magnetic resonance imaging protocol.

16. The method of claim 14, wherein the scanning protocol is a positron emission tomography protocol or a computer axial tomography protocol.

17. The method of claim 14, wherein the radiation is pulsed infrared radiation.

18. The method of claim 14, wherein the number of markers is more than three.

19. The method of claim 14, further comprising diagnosing a condition of the subject using results from the scanning protocol.

20. The method of claim 14, further comprising testing motion correction algorithms.

21. A system for updating a scanning protocol performed by a scanner on a subject to compensate for movement by the subject, comprising:

(a) two or more devices each comprising cameras and integrated sources of radiation that transmit radiation incident on three or more markers on the subject and detect radiation reflected by the markers; and

(b) a computer-readable medium having a program that is used by a processor to processes data based on the radiation detected by the cameras and communicate with the scanner to update the scanning protocol to compensate for motion of the subject.

22. The system of claim 21, wherein the cameras are infrared cameras and the sources of radiation are light-emitting diodes that emit diffuse pulsed infrared radiation.

23. The system of claim 21, wherein two cameras detect the radiation.

24. The system of claim 21, wherein the cameras can function in a region having a magnetic field strength of more than 100 Gauss without an appreciable loss of accuracy.

25. The system of claim 21, wherein the computer-readable medium is an optical or magnetic storage medium.

26. The system of claim 21, wherein the scanning protocol is a magnetic resonance imaging protocol.

27. A magnetic resonance system for updating a magnetic resonance imaging protocol to compensate for movement of a subject, comprising:

(a) a magnetic resonance scanner that performs the magnetic resonance imaging protocol on the subject;

(b) two cameras that detect pulsed infrared radiation emitted by light-emitting diodes that is reflected by at least three spherical markers on the subject; and

(c) a processor that processes data based on the infrared radiation detected by the cameras and communicates with the magnetic resonance scanner to update the magnetic resonance imaging protocol to compensate for movement of the subject.

28. The magnetic resonance system of claim 27, wherein the movement is a rotation, a translation, or a combination of a rotation and a translation of the subject.

29. The magnetic resonance system of claim 27, wherein the subject is a human head.